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DRAFT FINAL
TROY ASBESTOS PROPERTY EVALUATION WORK PLAN
(FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN)

FOR THE

TROY ASBESTOS PROPERTY EVALUATION PROJECT

Troy Operable Unit of the Libby Asbestos Superfund Site

April 2006

Prepared for:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Remediation Division
P.O. Box 200901
Helena, Montana 59620

Contract Number 402014
Contract Task Order Number 41

Prepared by:

TETRA TECH EM INC.
Power Block Building, Suite 612
7 West 6th Avenue
Helena, Montana 59601
(406) 442-5588

DRAFT FINAL

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TROY ASBESTOS PROPERTY EVALUATION PROJECT

Prepared for:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

REVIEWS AND APPROVALS

Tetra Tech EM Inc. Project Manager: _____ Date: _____
J. Edward Surbrugg, Ph.D.

DEQ Project Officer: _____ Date: _____
Catherine LeCours

EPA Remedial Project Manager: _____ Date: _____
~~Peggy Churchill~~
Roger Haeggerheide

DISTRIBUTION LIST

Name	Responsibility	Affiliation
Catherine LeCours	DEQ Project Officer	Montana Department of Environmental Quality – Helena, Montana
J. Edward Surbrugg	Tetra Tech Project Manager	Tetra Tech EM Inc. – Helena, Montana
Roger Hargesheimer Peggy Churchill	EPA Remedial Project Manager	EPA – Denver, Colorado
Mike Cirian	EPA Remedial Project Manager	EPA – Libby, Montana
Jeff Montera	CDM Libby Project Manager	CDM – Denver, Colorado
Mark Raney	Volpe Libby Technical Lead	Department of Transportation, Volpe Center – Cambridge, Massachusetts
Pat Carnes	Volpe Libby Database Project Manager	Department of Transportation, Volpe Center – Cambridge, Massachusetts
Terry Crowell	CDM Libby Sample Coordinator	CDM – Libby, Montana

Distributed to members of TAG; Marty McCauley & Paul Peronard?

CONTENTS

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Appendix

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

AHERA	Asbestos Hazard Emergency Response Act
amsl	Above mean sea level
ASTM	ASTM International (formerly the American Society for Testing and Materials)
CDM	Camp Dresser & McKee
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
cm^2	Square centimeters
CPR	Cardiopulmonary resuscitation
DEQ	Montana Department of Environmental Quality
DPHHS	Montana Department of Public Health and Human Services
DQO	Data quality objective
eLastic	Electronic Libby Asbestos Sample Tracking Information Center
EPA	U.S. Environmental Protection Agency
FSDS	Field sampling data sheet
GPS	Global positioning system
HASP	Health and safety plan
HAZWOPER	Hazardous waste operations
IFF	Inspection field form
LA	Libby amphibole
Microvac	Microvacuum
mm	Millimeters
OSHA	Occupational Safety and Health Administration
OU	Operable unit
PPE	Personal protective equipment
PLM	Polarized light microscopy
QA	Quality assurance
QC	Quality control
SOP	Standard operating procedure
TAPE	Troy Asbestos Property Evaluation
Tetra Tech	Tetra Tech EM Inc.
µm	Micrometers
VCI	Vermiculite-containing insulation
Volpe Center	John A. Volpe National Transportation Systems Center

1.0 PROJECT DESCRIPTION AND BACKGROUND

Tetra Tech EM Inc. (Tetra Tech) received Task Order No. 41 from the Montana Department of Environmental Quality, Remediation Division (DEQ), under DEQ Contract No. 402014. The purpose of this task order is to complete a Troy Asbestos Property Evaluation (TAPE) Work Plan for the Troy Operable Unit (OU) of the Libby Asbestos Superfund Site. The United States Environmental Protection Agency (EPA) is the lead agency for the Libby Asbestos Superfund Site. DEQ is the lead agency for the Troy OU through a Cooperative Agreement with EPA. EPA requested DEQ lead the Troy OU for efficient resource allocation. The TAPE Work Plan describes the field and property inspections and sample collection necessary to identify if and where asbestos is present within the Troy OU and the concentrations and quantity, if present. This information will be used at a later date to support cleanup decisions.

This TAPE Work Plan document is a combined field sampling plan and quality assurance project plan and is referred to as the TAPE Work Plan. Tables and figures in this document follow the first reference in the text. Appendix A contains the site-specific health and safety plan (HASP), Appendix B contains copies of project-applicable standard operating procedures (SOPs), Appendix C is a list of equipment and supplies required for the project, Appendix D contains samples of information for residents, and Appendix E contains example TAPE project field forms.

1.1 PROJECT BACKGROUND AND PURPOSE FOR SAMPLING

Troy, Montana, is located 18 miles northwest of Libby, Montana. From the 1920s until 1990, an active vermiculite mine and associated processing operations were located at Libby. While it was in operation, the vermiculite mine in Libby may have produced 80 percent of the world's supply of vermiculite (EPA 2005). Vermiculite is used primarily for insulation in buildings and as a soil amendment. The Libby vermiculite deposit is contaminated with amphibole asbestos. For decades, the processing of vermiculite ore and generation and disposal of waste materials resulted in widespread asbestos contamination of the Libby community. In 1999, EPA Region 8 dispatched an emergency response team to investigate media reports of asbestos contamination and high rates of asbestos-related disease in Libby. Subsequent environmental investigations have found many areas in and around Libby contaminated with LA. – spell out

The health effects from airborne exposure to the more common commercially used or encountered asbestos mineral forms (chrysotile, tremolite, actinolite, anthophyllite, amosite, crocidolite) include: (1) pleural disease (plaques, diffuse thickening, calcifications, and pleural effusions), (2) interstitial disease (asbestosis), (3) lung cancer, and (4) mesothelioma (a rare cancer of mesothelial cells in the pleura or peritoneum). The observed health effects associated with exposure to asbestiform amphibole fibers (~~Libby Amphibole~~) (Meeker, 2003) at the Libby site have been well documented and are clearly consistent illnesses seen with the more common asbestos mineral exposures (as noted below).

Studies performed in the early 1980's by researchers from McGill University (McDonald 1986a-b) and the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH) (Amandus 1987a-c) found that former employees of the Libby vermiculite mine had significantly increased pulmonary morbidity and mortality from asbestosis and lung malignancies. Researchers at NIOSH who studied the annual chest x-rays of mine and mill workers with at least 5 years tenure (between 1975 and 1982) also found an increased prevalence of the radiographic abnormalities associated with asbestos-related disease. A recent follow-up study of Libby vermiculite workers that were previously evaluated in the 1980's, found that "this small cohort of vermiculite miners, exposed to amphibole fibers in the tremolite series, has suffered severely from both malignant and non-malignant respiratory disease"(McDonald, 2002). The overall proportionate mortality among the group for mesothelioma (4.2%) was extremely high, being similar to that seen for crocidolite (considered by many to be the most toxic form of asbestos) miners in South Africa (4.7%) and Australia (3.9%) (McDonald 2002; McDonald 2004). For comparison, the age-adjusted incidence of mesothelioma in the United States (1992-2002) was about 0.001% (1 case per 100,000) with the occurrence of cases being extremely rare prior to age 50 (SEER, 2005).

More recent studies completed at the Libby site have also found increased mortality and morbidity among former workers, as well as, others in the community without any direct occupational exposures to the mine or processing activities. A mortality study conducted by investigators from the CDC, Agency for Toxic Substances and Disease Registry (ATSDR) found markedly elevated death rates of asbestosis, lung cancer, and mesothelioma for the Libby Community for the 20-year period examined (1979–1998). Mortality from asbestosis was approximately 40 times higher than the rest of Montana and 60 times higher than the rest of the United States (ATSDR 2000, ATSDR 2002a).

Large-scale medical screening of over 7300 individuals that worked or lived in Libby for at least six months prior to 1990, found significantly increased rates of asbestos-related radiologic abnormalities. Approximately 18% (1186/6668) of the participants with asbestos-related pleural abnormalities were identified by at least 2 out of 3 B-readers. The prevalence of pleural abnormalities increased with increasing exposure pathways, ranging from 6.7% for those who were not able to identify any specific exposure pathways aside from living in Libby to 34.6% for those who reported 12 or more specific exposure pathways. The majority of individuals (>70%) with pleural abnormalities did not directly work for the mine or processing operations, or with any secondary contractors for the mine (Peipins 2003).

~~Originally believed to be a problem limited to the mine workers, the scope increased~~. EPA began Time Critical Removal Actions in Libby in 1999 through a two-phased approach. The Phase I investigation was used to determine if a time critical removal action was warranted in Libby to protect human health, to identify potential major source areas, and to identify the appropriate analytical methods for measuring concentrations of LA in those source materials (CDM 2002). The Phase II investigation was used to collect detailed information about airborne concentrations in air that result from sources of contamination that are disturbed (CDM 2003b). The combined results from the Phase I and II investigation include:

- Exposure to LA is a threat to human health.
- Release of respirable LA fibers occurs when source materials are disturbed.

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Region VIII Records Center at (303) 312-6473.

- Source materials include vermiculite insulation, vermiculite products (building materials) and process wastes, and contaminated soils.
- Contaminated indoor dust found in residential and commercial properties is a potential exposure pathway.
- There is widespread presence of LA throughout the Libby area.

As a result of the findings from the Phase I and II investigations, and because the Libby Asbestos Superfund Site was listed on the National Priorities List in 2002, EPA further investigated residences and businesses in the Libby study area boundary (EPA 2003b). EPA began the Libby Asbestos Superfund Site Contaminant Screening Study, which was considered the first part of the Remedial Investigation, in 2002. The ongoing objective of the Contaminant Screening Study is to obtain information concerning the presence and nature of LA contamination at properties in Libby (CDM 2003a). As of December 2005, EPA and their contractors have investigated 4,029 [update figures] properties in the Libby area through the Contaminant Screening Study.

The purpose of the TAPE is identical to that of the Contaminant Screening Study. It is believed that nature of LA contamination, and associated exposure pathways present in Troy are similar to those observed in Libby. For instance, preliminary investigations have indicated similarities in the vermiculite insulation present in Troy to that found in Libby (USGS 2005). The draft Troy Conceptual Site Model (CSM) (Section 1.2) illustrates that potential exposures in Troy are similar to those in Libby, therefore, a systematic screening of Troy area residences and business is necessary to gather sufficient information to determine how many Troy area properties are contaminated with LA. Some vermiculite mine workers lived in Troy and commuted to the mine to work each day. The mine workers were exposed to asbestos-contaminated materials at the mine and processing facilities, and they transported asbestos-contaminated dust to their homes on clothes and equipment. Residents of Troy also traveled to Libby for everyday activities such as shopping, working (other than at the mine), and attending school sporting events and likely came in contact with LA in Libby during these frequent visits. In addition, the asbestos-contaminated vermiculite ore and waste materials in varying forms may have been used for amending soils (as fill or as a conditioner), building materials (plaster, concrete, or chinking amendment), and for insulating buildings in and around Troy. What about transportation corridors (railroads, roads) through Troy, did folks burn contaminated wood ?, contaminated cars, other ?]

1.2 CONCEPTUAL SITE MODEL

Airborne exposure to asbestos is the main exposure route of concern resulting in malignant and non-malignant respiratory diseases. Oral ingestion of asbestos in environmental settings may also be a potential route of exposure and concern. ~~human health concern because chronic inhalation of excessive levels of asbestos fibers suspended in air can result in lung diseases such as asbestosis and mesothelioma. The relationship between asbestos exposure and mesothelioma has been documented, and at least 70 percent of people with mesothelioma report that they have been exposed to asbestos (National Cancer Institute 2005).~~ Figure 1-1 presents a draft Site Conceptual Model for Troy, which identifies exposure pathways by which asbestos fibers from the Libby mine might be inhaled or ingested by humans. I recommend modifying the current Troy to be more consistent with the Libby CSM. Modifications should include how fibers/contamination got to Troy (as noted above) and any other pathways that may be specific to Troy. Any pathways specific to the Libby CSM that may not be relevant for Troy should be removed. You will also need to clearly define the geographic boundaries of the Troy OU. The draft CSM will be refined as additional data are acquired and the understanding of actual transport and exposure pathways for Troy is improved. EPA, CDM, and the Montana Department of Public Health and Human Services (Montana DPHHS) have provided additional related background information for the Libby asbestos project ~~and on mesothelioma in Montana~~ (I don't understand the relevance of this unless the data will be used to evaluate other geographic locations?) (CDM 2003; Montana DPHHS 2005).

1.3 TROY SITE INFORMATION

The Troy OU is located along the Kootenai River valley at an elevation ranging from 1,850 feet above mean sea level (amsl) at the northern end of the OU to 2,500 feet amsl on the mountain slopes surrounding the valley. The Troy OU is approximately 8 miles long and up to 1.8 miles wide. Topography of the Troy OU consists of relatively flat river valley terraces on both sides of a gently graded Kootenai River. Several tributaries flow into the Kootenai River along the 8-mile stretch contained within the Troy OU. Figure 1-2 provides a topographic view of the Troy OU boundaries.

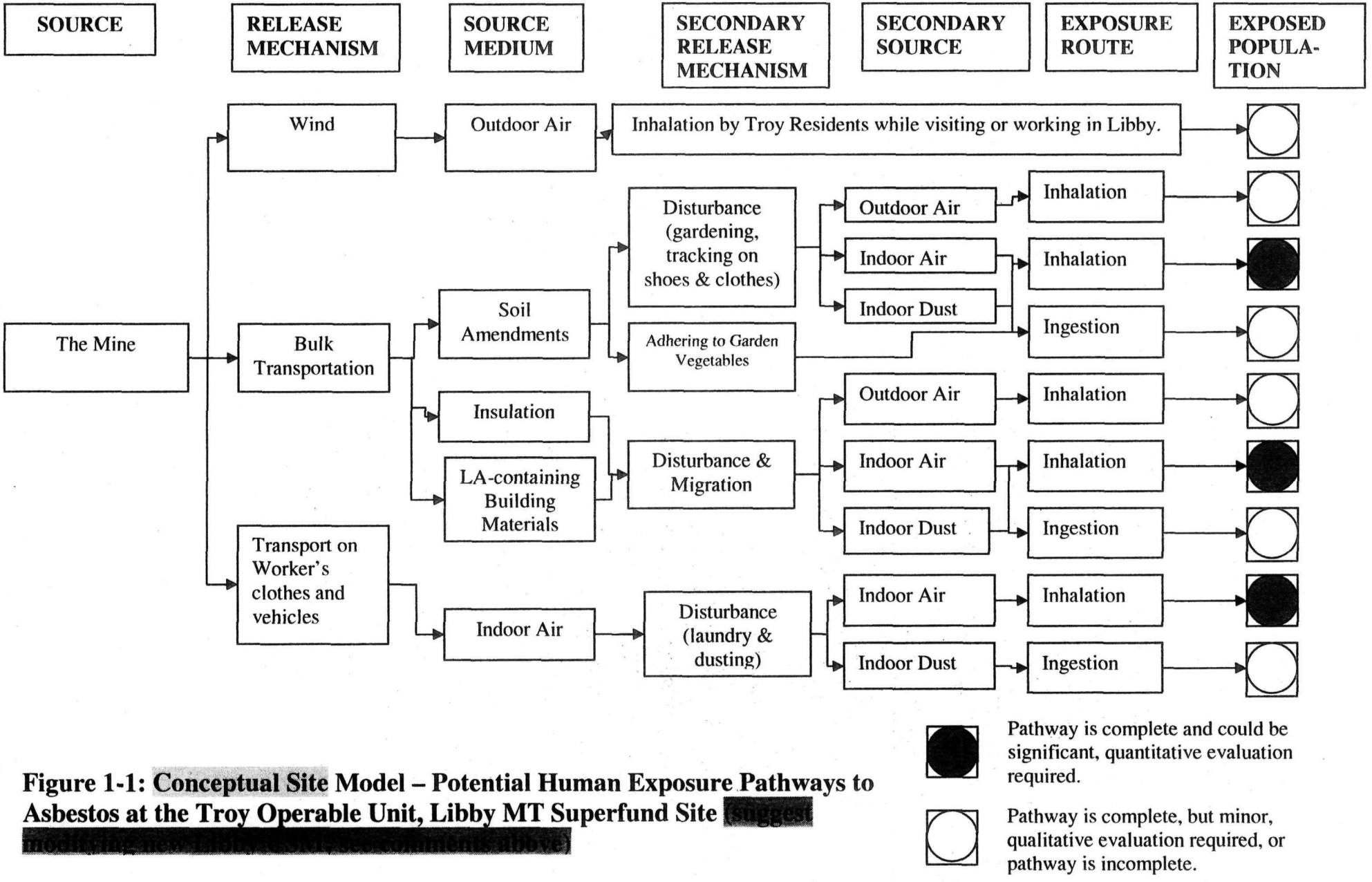

Figure 1-1: Conceptual Site Model – Potential Human Exposure Pathways to Asbestos at the Troy Operable Unit, Libby MT Superfund Site (suggest

Figure 1-2: Topographic View of the Troy OU

1.4 SCHEDULE

The schedule for the TAPE inspection and sampling field work is pending DEQ receiving adequate EPA funding. The TAPE field work may begin in the summer 2006 and would require approximately ~~75~~ 100 full work-days to complete (~~15~~ 20 weeks) based on an average of 15 total TAPE inspections per full day. The soil and dust samples collected from the TAPE field work will be prepared for analysis by CDM and analyzed for asbestos concentrations by a contract laboratory. Analysis of the samples is also dependent upon adequate EPA funding. Tetra Tech will prepare a TAPE Field Summary Report approximately 90 days after the completion of the field work. The draft TAPE project report would be submitted to the DEQ and others approximately 60 days after receiving the analytical data.

1.5 REPORT ORGANIZATION

This TAPE Work Plan is organized into eight sections. Section 1.0 is this introduction. The contents of Sections 2.0 through 8.0 are briefly described below.

- Section 2.0 Project Organization. This section identifies key project personnel and project responsibilities and provides an organizational chart and a table of participants with contact information.
- Section 3.0 Work Plan Rationale. This section describes the data quality objective (DQOs) steps used to establish the quantity and the quality of data to support decision making.
- Section 4.0 Field Procedures. This section describes the activities that will take place during the property evaluations. The SOPs for each activity and the HASP are referenced and detailed.
- Section 5.0 Field Quality Control Procedures: This section discusses the field quality assurance and quality control (QA/QC) procedures, including equipment decontamination, QA samples, field documentation, and chain of custody. Also discussed in this section are QA procedures used at the Libby Asbestos Superfund Site (EPA 2000c).
- Section 6.0 Data Management. This section describes how the data will be handled after they have been received from the Libby V2 database.
- Section 7.0 QA/QC Procedures. This section will describe the procedures that will be taken to ensure the quality and integrity of the TAPE data.

Finally, references used in preparing this document are presented in Section 8.0.

2.0 PROJECT ORGANIZATION

Table 2-1 presents the responsibilities and contact information for key personnel involved in the TAPE inspection and sampling project. In some cases, more than one responsibility has been assigned to a person.

The John A. Volpe National Transportation Systems Center (Volpe Center) is providing support to EPA Region VIII, including management of the Libby V2 database which is used to track sampling, analytical, and other pertinent data from the Libby Asbestos Superfund Site. Tetra Tech will transfer Troy data to and obtain data from EPA and their contractors. Tetra Tech will transfer custody of all soil and dust samples to CDM after the samples have been recorded and organized. CDM will then be responsible for custody and quality assurance of the samples until delivery to a contract laboratory for analysis. CDM contracts all analytical laboratories used for the Libby Asbestos Superfund Site. Therefore, CDM will oversee laboratory schedules and track data deliverables.

2.1 MONTANA DEQ OVERSIGHT

The DEQ Project Officer (or designee) will provide oversight of all field activities associated with this TAPE project. DEQ oversight personnel will have the ability to inspect all field and sampling activities, determine the appropriateness of the recorded data, and ensure that all activities comply with standard practices that meet the project objectives. Before any oversight is conducted, the Tetra Tech on-site health and safety coordinator will brief the DEQ oversight personnel to ensure safe practices are maintained throughout the TAPE field effort.

2.2 NON-AGENCY OBSERVATION OF FIELD ACTIVITIES

EPA will be allowed the opportunity to observe the TAPE project field activities. The request for non-Agency observation of field activities must first be coordinated with and approved by the DEQ Project Officer and the individual property owner. When inspection and sampling are being conducted on a Troy property and the owners are present, the property owners will have the opportunity to (1) observe Tetra Tech field inspection and sampling in a safe manner, (2) obtain copies of the field forms and property sketches completed for the property, (3) obtain receipt for samples collected, and (4) obtain a portion of samples collected (at the cost of the property owner). The Tetra Tech field team will brief property owners about the types of sampling and methods for completing the TAPE inspection and sampling;

however, the Tetra Tech field team will not interpret results or make conclusions from the inspection and sampling for the property owner.

If Tetra Tech obtains soil or dust samples at a property, Tetra Tech will, if requested, provide the property owner with a receipt for the samples identifying the number and types of samples collected before the field crew leaves the property. No sample results will be available during the TAPE inspection and sampling. An individual property owner who requests a portion of a sample must supply all necessary materials required for sampling, as well as arrange and pay for laboratory analysis of all additional samples collected.

2.3 SPECIAL TRAINING AND CERTIFICATES

Tetra Tech personnel who work on the TAPE project will have met the Occupational Safety and Health Administration (OSHA) training requirements defined in Title 29 Code of Federal Regulations (29 CFR) Part 1910.120(e) for working on hazardous waste sites. These requirements include: (1) 40 hours of formal off-site instruction; (2) a minimum of 3 days of actual on-site field experience under the supervision of a trained and experienced field supervisor; and (3) 8 hours of annual refresher training. In addition, all Tetra Tech personnel working on the TAPE project will have taken the Asbestos Hazard Emergency Response Act (AHERA) 24-hour asbestos inspector training course and will hold a current asbestos inspector license issued by the State of Montana. (Suggest EPA provide some additional site-specific training regarding the amphibole asbestos found in Libby and the health effects associated with exposure.)

taken care of during the week training?

Tetra Tech personnel working on the TAPE project must read and abide by the stipulations and guidelines set forth in Tetra Tech's HASP, which is Appendix A to this TAPE Work Plan. The HASP provides written instructions for health and safety training requirements, personal protective equipment (PPE) requirements, spill containment program, and health-hazard monitoring procedures and techniques. At least one member of every Tetra Tech field team will maintain current certification in the American Red Cross "Multimedia First Aid" and "Cardiopulmonary Resuscitation (CPR) Modular" or equivalent.

Copies of Tetra Tech's health and safety training records, including course completion certifications for the initial and refresher health and safety training, specialized AHERA training, and first aid and CPR training, are maintained in the Helena Tetra Tech office files for all TAPE field team members.

TABLE 2-1

KEY PERSONNEL

Name	Organization	Role	Responsibilities	Contact Information
Catherine LeCours	DEQ	Project Officer	• Monitors performance of the contractor • Reviews and approves all work plans and QA measures (FSP/QAPP) • Provides coordination with EPA, Volpe, and CDM • Provides primary interface with the Troy community and disseminate project information to the public	Montana Department of Environmental Quality PO Box 200901 Helena, MT 59620-0901 clecours@mt.gov (406) 841-5040
J. Edward Surbrugg	Tetra Tech	TAPE Project Manager	• Responsible for implementing all activities called out in the task order • Supervises preparation of work plan and approves document • Monitors and directs field activities to ensure compliance with work plan requirements • Provides coordination with DEQ Project Officer • Disseminate project information to interested parties and Troy property owners and direct questions to DEQ	Tetra Tech, Helena, MT 7 West 6th Avenue Helena, MT 59601 edward.surbrugg@ttemi.com (406) 442-5588
Mark Stockwell	Tetra Tech	- TAPE Field Team Leader - TAPE QA/QC Manager	• Responsible for directing and coordinating day-to-day field activities conducted by Tetra Tech • Verifies that field sampling and measurement procedures follow work plan • Conducts field audits for QA/QC • Provides DEQ Project Officer and TAPE project manager with regular reports on status of field activities • Disseminate project information to interested parties and Troy property owners and direct questions to TAPE project manager or DEQ	Tetra Tech, Sandpoint 324 Larchwood Drive Sagle, ID 83860 mark.stockwell@ttemi.com (208) 263-4524

TABLE 2-1
(Continued)

KEY PERSONNEL

Name	Organization	Role	Responsibilities	Contact Information
Jessica Allewalt	Tetra Tech	Troy Field Data Coordinator	• Responsible for working with TAPE project manager and TAPE field team leader to schedule TAPE inspections • Responsible for compiling, organizing, and auditing field data sheets and samples submitted daily by field teams • Responsible for transferring field data sheets and samples to the CDM Troy Sample Coordinator • Coordinate with CDM, EPA, and Volpe managers on sample delivery schedules and logistics • Reviews laboratory data before release to project team • Disseminate project information to interested parties and Troy property owners and direct questions to TAPE project manager or DEQ	Tetra Tech, Helena, MT 7 West 6th Avenue Helena, MT 59601 jessica.allewalt@ttemi.com (406) 442-5588
Joe Faubion	Tetra Tech	On-site TAPE Safety Officer	• Responsible for implementing health and safety plan and for determining appropriate site control measures and personal protection levels • Conducts safety briefings for Tetra Tech and site visitors • Can suspend operations that threaten health and safety • Disseminate project information to interested parties and Troy property owners and direct questions to TAPE project manager or DEQ	Tetra Tech, Helena, MT 7 West 6th Avenue Helena, MT 59601 joseph.faubion@ttemi.com (406) 442-5588
Ed Madej	Tetra Tech	Database and Geographic Information System Manager	• Responsible for developing, monitoring, and maintaining project database and property maps • Responds to requests from TAPE project manager and TAPE field team leader to provide copies of property maps to field teams on a daily basis • Works with CDM, Volpe, and EPA data and graphic managers to generate needed reports and maps from the Libby V2 database	Tetra Tech, Helena, MT 7 West 6th Avenue Helena, MT 59601 ed.madej@ttemi.com (406) 442-5588

TABLE 2-1
(Continued)

KEY PERSONNEL

Name	Organization	Role	Responsibilities	Contact Information
10 members Insert Know Field Team members	Tetra Tech	Field Team Member	• Responsible for conducting TAPE inspections and sampling as described in the work plan and for following SOPs. • Disseminate project information to interested parties and Troy property owners and direct questions to TAPE project manager or DEQ	Tetra Tech, Helena, MT 7 West 6th Avenue Helena, MT 59601 (406) 442-5588
TBD	CDM Troy Sample Coordinator	Troy Sample Coordinator from CDM	• Accepts FSDSs and corresponding samples from Tetra Tech • Responsible for quality review of electronic data entered by Tetra Tech • Coordinates with the CDM laboratory coordinator regarding laboratory or archive storage assignments • Prepares chain-of-custody forms (COCs); ships or hand delivers samples as necessary • Coordinates with the Tetra Tech Field Data Coordinator regarding laboratory sample/data issues; assists in the revision of FSDSs, electronic data, and COCs as necessary • Exports electronic data to the Volpe data manager (for upload into the Libby V2 database) and resolves any export file issues • Provides general quality control input for consistency with Libby project sample and data collection requirements	Troy Field Office TBD Some of these responsibilities will have be split between ~~Perhaps~~ TTEMI ESAT + USEPA
Courtney Zamora	Volpe Center, US DOT	Libby Site Manager/Field Representative	• Field Representative for Volpe Center • Review documents from Troy for consistency with Libby • Respond to resident's requests and concerns in Libby	EPA Information Center 501 Mineral Ave Libby, MT 59923 (406) 293-6194 Courtney.zamora@volpe.dot.gov
Shawn Oliveria	CDM	Libby Site Health and Safety Manager	• Health and Safety Manager for Libby Asbestos Project • Handle regulatory compliance for all dirty work operations and material handling procedures.	~~CDM Libby Office~~ 60 Port Blvd Libby, MT 59923 (406) 293-8595 (office) (406) 293-1547 (cell)

Why important?

Include ESAT + Marty McComb and assign responsibilities personnel

TABLE 2-1
(Continued)

KEY PERSONNEL

Mike Cirian	EPA	Remedial Project Manager/ Environmental Engineer	• On-Site Remedial Project Manager for the Libby Asbestos Superfund Site • Manage construction activities • Resolve conflict and respond to residential inquiries in Libby	EPA Information Center 501 Mineral Ave Libby, MT 59923 (406) 293-6194 Cirian.mike@epa.gov

Notes:

CDM	Camp Dresser & McKee	DEQ	Montana Dept. of Environmental Quality
EPA	U.S. Environmental Protection Agency	FSP	Field Sampling Plan
QAPP	Quality Assurance Project Plan	SOP	Standard Operating Procedure
TAPE	Troy Asbestos Property Evaluations	TBD	To be determined
Volpe	John A. Volpe National Transportation Systems Center	Tetra Tech	Tetra Tech EM Inc.
QA/QC	Quality Assurance/Quality Control		

Before work begins at a specific project site, Tetra Tech personnel are required to undergo site-specific training that thoroughly covers the following areas:

- Names of personnel and alternates responsible for health and safety at a project site
- Health and safety hazards present on site, including heat, physical stressors, insects and other potential biological hazards
- Selection of the appropriate personal protection levels
- Correct use of PPE
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment on site
- Medical surveillance requirements, including recognition of symptoms and signs that might indicate overexposure to hazardous substances, physical stressors (heat, cold), and other potential hazards
- Contents of the HASP
- site specific training regarding amphibole asbestos found in Libby and the health effects associated w/ exposure.

3.0 TROY DATA QUALITY OBJECTIVES

This section presents the DQOs for the TAPE inspection and sampling project. The DQOs are qualitative and quantitative statements developed through the seven-step DQO process (EPA 2000a, 2000b). The DQOs help to clarify the study objectives, define the most appropriate data to collect and the conditions under which to collect the data, and specify tolerable limits on decision errors that will be used as the basis for establishing the quantity and quality of data needed to support decision-making. The DQOs are used to develop a scientific and resource-effective design for data collection. The seven steps of the DQO process for this TAPE project are presented in Table 3-1.

Background information for the Troy OU study area was discussed in Section 1.0 as was a draft Site Conceptual Model (Figure 1-1). The Troy properties, where sources of LA contamination may be found, are not predictable; DEQ has therefore determined that each property in the Troy OU (including privately-owned and publicly-owned property) will be investigated and screened. The properties may or may not contain a building, or multiple buildings; specific use areas (gardens, former gardens, flower beds, gravel and dirt driveways, and play areas; all are areas with potentially greater exposure or greater use of vermiculite amendments); and yards and open space.

The DQOs will be used to design the TAPE project so that the sampling and analysis are appropriate to provide information to EPA regarding the properties with vermiculite-containing insulation (VCI) and other potential sources of LA contamination (vermiculite, building materials, or soil) within the Troy OU.

TABLE 3-1

DATA QUALITY OBJECTIVES
INVESTIGATION OF TROY OPERABLE UNIT

STEP 1: State the Problem

Section 1.0 of this Work Plan summarizes the history of the Libby Asbestos Superfund Site, identifies the key players and decision makers, illustrates the Site Conceptual Model, provides justification for the investigation and screening for the Troy OU, and identifies the schedule, budget, and necessary resources.

The following are problem statements associated with the Troy Properties investigation:

- Exposure to LA-contaminated vermiculite is a threat to human health (EPA 2000c).
- Respirable LA asbestos is released when source materials are disturbed (EPA 2000c).
- Potential source materials include VCI, LA-containing building materials, vermiculite waste products, ~~and~~ soils contaminated with LA, and household dust.
- All contaminated source materials (e.g., household dust, contaminated soils etc.) can potentially contribute to exposure pathways.
- It is believed that LA-contaminated materials may be found randomly in and around Troy in association with various activities (e.g., workers clothes, placement in gardens, contamination of transportation corridors etc.) since vermiculite mining began in Libby.
- All properties within the Troy OU should be evaluated for sources of LA contamination.

STEP 2: Identify the Decisions

Principle Discussion Question: Do sources of LA contamination exist at properties within the Troy OU?

Property Identification Decisions:

- Identify the potential properties to investigate.
- Identify the number of buildings on each property.
- Identify the number of specific use areas, yards, and open space areas on each property.

Sampling Decisions:

Inspect properties within the Troy OU to visually and analytically confirm the presence or absence of LA contamination in attics, other interior building spaces, and exterior areas, and the concentrations of LA if present.

- How will visual identification of LA in interior and exterior areas be conducted ?
- Where will interior dust samples be collected?
- Where will building material samples be collected?
- Where will exterior soil samples be collected?

TABLE 3-1 (continued)

DATA QUALITY OBJECTIVES
INVESTIGATION OF TROY OPERABLE UNIT

STEP 3: Identify Inputs to the Decisions
For each property, inputs to the decision include: • Review of aerial photographs to define individual properties, compile addresses, and determine if the property could be individually bought or sold. • Visual inspections of property to determine location and number of buildings, specific exterior use areas, and interior areas (e.g., living spaces, and attics). • Documented visible VCI in attics. • Documented visible VCI and other LA-containing building materials in interior building spaces (including but not limited to walls, crawl spaces, etc.). • Documented visible vermiculite in special use areas, yards, or open space areas. • Interviews with residents, owners, occupants, and employees • Analytical results from samples collected at each property to determine if LA is present and the concentration of the contamination if possible.
STEP 4: Define Study Boundaries
• The Troy OU generally consists of the valley bottom from the north half of Section 25, Township 31 North, Range 34 West, and Section 30, Township 31 North, Range 33 West, east to the junction of Highways 56 and 2, and north to the northern edge of Section 21, Township 32 North, Range 34 West. Figure 1-2 shows the configuration of the study area for the Troy OU. • Some properties (approximately 25) within the Troy OU have previously been inspected and sampled under the Libby OU4 investigation. Data have been recorded in the Libby database for these properties and will be integrated with additional sampling data from the TAPE.

Explanation as to why this has been determined as the study boundaries

TABLE 3-1 (continued)

DATA QUALITY OBJECTIVES
INVESTIGATION OF TROY PROPERTIES

STEP 5: Develop Decision Rules
The Record of Decision for the Troy OU will identify the specific parameters, conditions, and concentrations of LA that determine if a source exists at an individual property and if that source requires cleanup. This Work Plan simply details how DEQ will collect sufficient and defensible information essential to support future cleanup decisions. That information includes conversations with property owners and other anecdotal information regarding historical use of vermiculite, VCI, and other LA containing materials, visual inspections, and sample results. Sampling decisions for the Troy OU are based on sampling protocols and sampling results from the work done in Libby. Cleanup decisions will be based on the presence of and the concentrations of LA. • Visually determine if VCI is present or absent in attics of all buildings. If present determine if it is leaking into interior areas etc. to help guide collection of indoor dust samples from these areas to evaluate for the presence and concentrations of LA. • ~~If VCI is not visible in an attic, then~~ collect dust samples from the living spaces to evaluate for the presence and concentrations of LA from any secondary indoor or outdoor source of LA. • If vermiculite was used in building materials (plaster, concrete, or chinking), then collect building material samples to evaluate the presence and concentrations of LA from this potential secondary indoor source of LA. • If vermiculite is visible in a building interior, then collect discrete samples to evaluate the presence and concentrations of LA in the area. In addition, collect dust samples from the other building levels or areas to evaluate the presence and concentrations of LA in those living spaces. • If vermiculite is not visible in a building interior, then collect dust samples from the living spaces to evaluate the presence and concentrations of LA from any secondary indoor or outdoor source of LA. • Visually determine if vermiculite or LA is present in exterior areas. • Collect discrete soil samples from specific use areas to evaluate the presence and concentrations of LA. • If the property contains a yard and large open space, then subdivide these areas by similar land uses (for example, grassed areas, driveways, parking areas, and front, back, and side yards) and collect a composite soil sample from each subarea to evaluate the presence and concentrations of LA. Figure 3-1 shows the steps used to inspect and sample buildings and exterior property in the Troy OU. Figure 3-2 provides some typical outdoor soil sampling designs for specific use areas, yards, and open spaces.

TABLE 3-1 (continued)

DATA QUALITY OBJECTIVES
INVESTIGATION OF TROY PROPERTIES

STEP 6: Specify Tolerable Limits on Decision Errors

- Sampling and measurement error are associated with environmental data collection and may lead to decision errors. Sampling error occurs when the sample is not representative of the true site conditions. Measurement error occurs because of random and systematic errors associated with sample collection, handling, preparation, analysis, data reduction, and data handling. Decision errors are controlled by adopting a scientific approach that uses hypothesis testing to minimize the potential for error.
- There are two types of decision error: false negative error, and false positive error. A false negative decision error occurs when the null hypothesis is rejected although it is true. The consequences of a false negative error would be that VCI or LA-contaminated dust or soil at a Troy property is not identified for further evaluation and possible remediation. A false positive decision error occurs when the null hypothesis is not rejected although it is false. The consequences of a false positive error are that unnecessary resources are expended to evaluate media that is not truly contaminated or does a concern. ~~not pose undertake remedial action to address contaminated media that do not exist at concentrations that exceed action levels or acceptable risk levels.~~
- Property-specific sampling [redacted], and the random distribution of vermiculite and LA-contaminant soil limit the usefulness of statistical methods to eliminate sampling error. ~~Therefore, sampling methods and procedures will be based on results from the Libby Asbestos Superfund Site.~~ Tolerable limits on sampling decision errors cannot be precisely defined; however, the decision errors will be minimized by inspecting and screening all properties in the Troy operable unit. Decision errors based on analytical data will be minimized by the use of standard EPA-approved and Libby-specific analytical methods and other pertinent information available from the Libby site.

STEP 7: Optimize the Sampling Design

- All properties in the Troy OU will be uniquely defined in the work plan, and their locations will be identified using existing Lincoln County records, cadastral databases, and low-level aerial photographs. The number of Troy properties to be investigated will be approximately 1,000.
- Dust and soil samples will be collected using similar methods and standardized procedures that have been employed for the Libby Asbestos Superfund Site OU 4. With more than 4,000 Libby properties sampled since 2001, the methods have been defined (CDM 2002; CDM 2003a; CDM 2003b; EPA 2003a). [redacted]
- Field QA/QC procedures will be implemented and will include equipment and personnel decontamination, QA samples, field documentation, and sample chain of custody. Scientifically valid and legally defensible data will be supported by collection of dust and soil field blanks and other QA samples at a frequency necessary to assess potential cross contamination from equipment and sample integrity during collection.
- Field sample data sheets, similar to those used in Libby, will be completed for each sample collected and each property inspected within the Troy OU. The field data sheet information will be recorded

TABLE 3-1 (continued)

DATA QUALITY OBJECTIVES
INVESTIGATION OF TROY PROPERTIES

STEP 7: Optimize the Sampling Design (Continued)
• Dust and soil samples collected at each Troy property will be uniquely labeled, and sampling information will be recorded into the eLastic application. The paper sample records, along with the samples, will be transferred under chain-of-custody procedures to a CDM sample data coordinator, who will verify completeness and accuracy of the records.
• DEQ and its contractor, Tetra Tech, will work closely with EPA, Volpe, and its contractor, CDM, to ensure that sample integrity is maintained throughout and that data quality is adequate to meet project objectives.
• CDM will transfer the electronic sampling and field form information to EPA and Volpe and prepare the samples for analysis.
• Figure 3-3 provides a schematic diagram of the TAPE process used by Tetra Tech to organize, conduct the property evaluations and sampling, and provide samples and electronic information to CDM, EPA, and Volpe.

into the electronic Libby Asbestos Sample Tracking Information Center (eLASTIC) application for uploading to the existing Libby V2 database.

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Figure 3-1 TAPE Inputs

Figure 3-2 TAPE Outdoor Soil Sampling Design

Figure 3-3 TAPE Inspection and Sampling Process Diagram

4.0 FIELD PROCEDURES

This section of the TAPE Work Plan describes the field activities to be implemented for the TAPE inspection and sampling project and includes the following tasks:

- Mobilizing and demobilizing
- Obtaining access agreements
- Scheduling inspections with property owners
- Conducting verbal interviews
- Conducting property inspections – indoor, attic, outbuildings, outdoor open spaces, yards, specific use areas (using the inspection field form [IFF]).. incorporate new outdoor visual inspection approach
- Collecting indoor dust samples (recorded on dust sample field sampling data sheet [FSDS])
- Collecting building material samples (recorded on soil-like material sample FSDS)
- Collecting outdoor soil samples (recorded on soil-like material sample FSDS)
- Collecting QA/QC samples
- Decontaminating equipment and personnel
- Containing and disposing of investigation-derived waste

SOPs, with current amendments, are provided in Appendix B and are referenced throughout this section of the TAPE Work Plan. As appropriate, Tetra Tech has developed project-specific guidance for Troy which is based largely on guidance developed specifically for the Libby Asbestos Superfund Site. The Tetra Tech project-specific guidance and the Libby-specific procedures that were used to generate the Troy guidance documents are listed below with copies provided in Appendix B.

• Tetra Tech	TAPE FSDS and IFF Completion Guidance
• Tetra Tech	TAPE Soil Sampling Guidance
• CDM-Libby-05	Site Specific Standard Operating Procedure for Soil Sample Collection

updated in QC?

Health and safety protocols and requirements will apply to all field activities and are summarized below. Information on quality control is provided in Sections 5.0 and 7.0 of this TAPE Work Plan.

4.1 HEALTH AND SAFETY PROCEDURES

The TAPE HASP (Appendix A) and Tetra Tech's corporate health and safety program plan will apply to all field activities undertaken as part of this project. All field staff conducting inspection and sampling activities will be required to:

1. Hold a current OSHA hazardous waste operations (HAZWOPER) 40-hour training certification and up-to-date 8-hour refreshers, as required under 29CFR1910.120;
2. Hold a current asbestos inspector training certificate;
3. Hold a State of Montana asbestos inspector license;
4. Have medical clearance to work wearing a half-face air purifying respirator; and
5. Be quantitatively fit-tested for the specific project respirator within the 12 months prior to the field activities.

The TAPE HASP in Appendix A provides detailed health and safety protocols and requirements, including directions for when to use PPE, such as respirators. All attic entries will be conducted in modified level C PPE that will include a half-face or full-face air purifying respirator with HEPA cartridges. Other property inspection activities, including dust sampling and soil sampling, will be conducted in modified level D PPE. Mr. Joe Faubion will be the Tetra Tech Site Safety Officer for the field activities (see Table 2-1 of this TAPE Work Plan). Negative exposure assessments for the field teams will be performed as necessary, as described in the HASP and at the direction of the Site Safety Officer.

4.2 SITE ACCESS AND LOGISTICS

Section 4.2 provides information about community relations, logistics and schedules, and site access agreements.

4.2.1 Community Relations and Information Centers

Tetra Tech will coordinate with DEQ to ensure that sufficient public outreach (including public meetings, fact sheets, newspaper articles and notices, and radio announcements) is completed before and during implementation of the TAPE. Tetra Tech will provide personnel to attend public meetings in Troy and will help prepare presentation materials, at DEQ's request. Public outreach and information on the

purpose and nature of the TAPE and its role in the overall investigations and cleanup at Troy and Libby are essential to its success.

Tetra Tech and DEQ will set up and staff a field office in Troy at least 1 month before and for the duration of TAPE field activities. The Tetra Tech field office will be the TAPE logistical center for obtaining property access agreements, scheduling field activities, returning samples and field forms at the end of the day, and transferring sample custody from Tetra Tech to CDM. The Tetra Tech field office will also provide a physical location and venue for people in Troy to provide and obtain information about the project. The Tetra Tech field office will also have telephones and answering machines for contacting project personnel when the office is not staffed and after regular hours (Monday through Friday 8:00 am to 5:00 pm). The address and phone number for the Tetra Tech field office will be advertised and posted at the location.

The existing EPA Information Center at 501 Mineral Ave in Libby will also be an information resource for Troy residents, providing access to major project documents. Troy area residents may phone the information center toll free at 1-888-420-6810 or visit the center Monday through Friday from 8:30 a.m. to 5:00 p.m.

DEQ has established a repository for general and Troy-specific information at the City Hall in Troy, located at 301 E. Kootenai. The Troy City Hall is open Monday through Friday from 8:00 a.m. to 5:00 p.m. Tetra Tech and DEQ will continue to provide updated information in City Hall throughout the field sampling activities.

Information about the Libby Asbestos Superfund Site is also available on the Internet at <http://www.epa.gov/region8/superfund/libby.html>. DEQ will maintain updated information regarding Troy on this webpage.

Section 2.0 of this Work Plan discusses the roles and responsibilities of the DEQ and Tetra Tech in community relations.

4.2.2 Logistics and Schedule

Tetra Tech will establish a field office in Troy for the duration of TAPE field activities. Tetra Tech will identify and provide all necessary personnel, sampling equipment, PPE, and project materials for

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implementing this Work Plan. All Tetra Tech field personnel will be trained not only in specific tasks but also on the overall objectives of the TAPE. This training will facilitate TAPE implementation and allow for effective communication with the public and other team members.

Tetra Tech personnel will include the TAPE project manager, who will oversee all project activities and logistics and will ensure that the lines of communication are maintained to resolve any issues or concerns that may arise during the field efforts. The Tetra Tech project manager will reside in Helena but will be at the project site in Troy for about 50 percent of the field activities. The TAPE field team leader will be based out of Troy and will be responsible for obtaining site access agreements, assisting with public outreach, scheduling daily field activities, and providing quality control and oversight of the five TAPE field teams. Tetra Tech will also provide a field data coordinator to reside in Troy and assist the project manager and field team leader with daily project tasks. The Tetra Tech Field Data Coordinator will have primary responsibility for checking and cataloging soil and dust samples at the end of each day and for working closely with the CDM Troy Sample Coordinator to ensure that complete, adequate, and secure sample information is collected and transferred to EPA. The detailed responsibilities for these Tetra Tech project personnel are further discussed in Section 5.5.

Tetra Tech will provide five two-person TAPE field teams stationed in Troy for the duration of the field effort. Some substitution and rotation of field staff on and off the TAPE project is expected, but the field staff will work a minimum of 2 weeks before substitutions occur. The Tetra Tech field team leader (Mr. Stockwell) will continuously accompany the field teams to ensure and verify that the teams are conducting the TAPE activities as described and outlined in this Work Plan. The Tetra Tech field teams may conduct limited TAPE inspections on weekends (both Saturday and Sunday) to better accommodate the schedules of Troy property owners. Both members of a field team will be HAZWOPER certified, hold current asbestos inspector licenses, and be trained to properly handle the health and safety protocols for this project.

On average, a Tetra Tech field team will complete ~~three~~ two to three TAPE inspections per day, depending on the complexity of the properties inspected. With five field teams, Tetra Tech can complete an average of ~~15~~ 11 total TAPE inspections per full day. If the field inspections continue uninterrupted, Tetra Tech could complete the inspections of more than 1,000 Troy properties in about ~~75~~ 100 full work days, or within a ~~4~~ 20 week time frame. Tetra Tech's projected schedule for completing the TAPE inspections will be finalized when DEQ receives adequate EPA funding.

4.2.2.1 Communications

Field team members will be provided with cell phones (which will necessitate use of a temporary cell tower), satellite phones, or multi-way radios for the duration of field activities. Contact information, including emergency numbers, for all field teams and for TAPE project management personnel in Helena, Montana, will be stored in the Tetra Tech Troy field office. In addition, the Montana DEQ TAPE Project Officer (Ms. Catherine LeCours), CDM Troy Sample Coordinator, and EPA Libby Asbestos Superfund Site personnel will be provided with contact information for ready access to the Tetra Tech field teams.

4.2.2.2 Equipment

Appendix C details equipment and supplies Tetra Tech identified as necessary for the TAPE field activities described in this Work Plan. Equipment and supplies that are not immediately available to Tetra Tech will be purchased or rented before TAPE field activities begin. Before purchased or rental equipment or supplies will be accepted, the Tetra Tech field team manager will inspect the goods to ensure they are in good condition and free of defects.

4.2.2.3 Pre-Field Activities

Before field crews mobilize to Troy for the TAPE field inspections, Tetra Tech will prepare detailed property maps that identify individual Troy properties. Property boundary and other details will be gathered from public databases (cadastral) and projected onto a high-quality, high-resolution air photograph. Individual Troy property maps will be used during the TAPE field inspections to record approximate locations of the specific use areas and yard samples collected at each property. These property maps will be field checked and may be revised as necessary during the inspections. Tentative inspection and sampling schedules may be based on a block-by-block TAPE inspection pattern. The TAPE inspection schedule will be refined as Tetra Tech schedules the inspections at times and dates convenient to the property owners.

4.2.2.4 Field Team Organization

Five field teams of two people per team will conduct the TAPE inspections and sampling. On average, 15 properties will be inspected and sampled per day. At the start of each day, the field teams will meet at the

Tetra Tech field office for daily safety and organizational briefings (see Section 4.1 and Appendix A HASP).

Before the morning briefing, the Tetra Tech field team leader will have prepared a packet for each property to be inspected and sampled that day. Each packet will include:

- A copy of the signed access agreement or blank access agreement if occupant provided prior verbal agreement,
- Details of the scheduled inspection date and time, and the name and telephone number of the property owner or the person who will be present for inspection and sampling, if different than the property owner,
- A property-specific verbal interview form,
- A property-specific IFF,
- A property-specific FSDS,
- Preprinted property-specific property, building, sample point, and sample identification labels, and
- Two copies of the property parcel maps.

Each field team will have a numbered logbook specific for the Troy project and will be responsible for any additional information included in the logbook. Additional TAPE inspection and sampling supplies (as described in Appendix C, list of supplies) will be kept at the Tetra Tech field office for use by the field teams. The daily briefings will be used to coordinate daily property inspections, calibrate sampling equipment, and collect supplies. The daily briefing will include a review of any issues or problems that arose the previous day, and will provide an opportunity for field team members to ask questions and share lessons learned. At the end of each day, field teams will return to the field office to deliver samples and paperwork to the Tetra Tech Field Data Coordinator, download digital cameras, charge rechargeable equipment, and store field equipment for the evening. Section 6.0 of this Work Plan contains additional logistical details on TAPE data management.

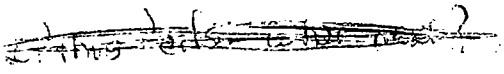
4.2.3 Access Agreements

Approximately 1 month before TAPE field activities begin, Tetra Tech will assist DEQ with mailing access agreements to every Troy property owner where the property has been identified for inspection and sampling. A cover letter will contain information from DEQ on the proposed sampling and contact information for Tetra Tech Troy field office, DEQ, EPA, and the Libby Information Center. The packet

will also contain two copies of an access agreement form and a postage-paid envelope for the property owners to return a completed access agreement. The other copy of the access agreement is for the property owner's records. The cover letter will explain the need for the signed access agreement and encourage any property owners who have questions or concerns about the process to contact the designated parties. An example cover letter and access agreement is provided in Appendix D.

The Tetra Tech project manager and field team leader will manage information mailed in from the Troy property owners, including signed access agreements. Approximately one month after DEQ and Tetra Tech mail the access agreements, a field team of two Tetra Tech personnel will follow up with properties where no response has been received. Follow up contacts (in person or by telephone) will explain the purpose of the TAPE, describe the inspection and sampling process, and answer any pertinent questions. Property owners may provide verbal approval and schedule an inspection; therefore, field teams may obtain a signed access agreement immediately prior to a scheduled inspection.

If property owners are not available during the reconnaissance, the field team will revisit each location at least three times, and the field team leader (or designee) will continue to follow up with personal visits and by telephone. After repeated attempts to contact the property owner by the field teams and the field team leader, Tetra Tech will repeat the mailing with a letter describing the attempts made to contact the property owner.



When the field team leader has received either verbal approval or a completed and signed access agreement either by mail or from a field team, Tetra Tech will contact the property owner by telephone to schedule a TAPE inspection and sampling visit.

Tetra Tech will make reasonable efforts to find a TAPE inspection and sampling date and time that are convenient for the property owner. TAPE inspections and sampling schedules will include evenings (daylight hours only) and weekends, as needed based on the requests of property owners. If property owners respond to the access agreement favorably, but a property is currently uninhabited (for example, it is only seasonally occupied or is currently for sale, or no buildings are present on the property), Tetra Tech will attempt to inspect and sample the property with a designee of the property owner. Properties will not be exempted from inspection or sampling on the basis that they are currently uninhabited, however.

Tetra Tech will not advise property owners of the likely nature of removals at their properties or estimated removal dates during the TAPE scheduling phase, the personal interviews, or the TAPE inspections and sampling. Property owners will be advised that DEQ and EPA will determine removals and schedules after analytical results have been received and evaluated.

Some Troy property owners may be non-responsive or unwilling to sign an access agreement, even when Tetra Tech has attempted to contact them by all reasonable means (telephone, visit to the property, and repeated mailings) to obtain permission for a TAPE inspection and sampling. Tetra Tech will provide DEQ with a list of all Troy properties where the property owner could not be contacted or unwilling to sign an access agreement at the conclusion of TAPE field activities.

4.3 VERBAL INTERVIEW

The Troy property visit by the TAPE field team will commence with a verbal interview by the field team with the property owner to acquire background information about the property. The field team will interview the property owner using the questions provided on the Interview for Residents/Employees form (Appendix E....I need to obtain the latest version of Appendix E for review and comment...some edits were recently suggested to the interview form during training on the Libby Database in December ?). Interview topics will include the known or suspected use of VCI or other LA-containing building materials in the house or outbuildings and possible introduction of other sources of LA within or near the property (including garden and landscaped areas and neighboring properties). A unique property identification number (AD-XXXXXX) will be assigned to each individual property that is inspected.

All buildings encountered during the TAPE inspections will be classified as a primary structure (habitable building, for example, a house, apartment, or main commercial space); or a secondary structure (non-habitable building, such as garages, shops, sheds, barns, or dog houses). The verbal interview will address all primary and secondary buildings and special use, open space, and yard areas located on a Troy property.

4.4 BUILDING INSPECTION, SAMPLE COLLECTION, AND RECORDING PROCEDURES

This section describes the inspection, sampling, and recording to be completed for each TAPE inspection.

4.4.1 Indoor Inspection

The two-person field team will visually inspect each building for the presence of LA contamination. One team member will access and inspect the attic (if safe, present, and reasonably accessible) and will inspect additional areas where VCI may be exposed in living spaces (crawlspaces, closets, and any wall openings). If VCI is observed, the field team member will estimate the quantity based on field measurements or visual estimation, with field measurements (length, width, and height of item) collected wherever possible.

The second team member will document results, including estimated quantities of VCI and other insulation (if present), on the IFF and will record additional pertinent information in the field logbook. As much as is possible in a non-destructive manner, the visual inspection will include checking under other types of insulation (such as blown-in or fiberglass insulation) for VCI. Visual inspections will not involve opening up walls or ductwork to inspect for VCI within the building wall cavities, but will include removal of a representative sample of electrical switch plates to inspect wall interiors. Furthermore, it will include inspecting ductwork in accessible, unfinished areas of the building for VCI. In particular, the field team will note whether utility conduits (including heat/cooling vents) run from the attic to the living space. Visual inspections will not include inspecting the roof.

Attics will be considered reasonably accessible if they can be reached by stairs, hanging stairs, or a non-conductive stepladder (either from the interior or exterior of the building). Attics will be inspected in a manner that, in the judgment of the field team, is not likely to release additional VCI into the living space (exterior access is preferable). The field team will compare exterior roof lines and interior ceiling heights with attic interiors in an effort to identify isolated attic areas that may exist between the roof and the main attic, or between the attic and the interior ceilings. If isolated attics are found, they will be inspected if possible, and barriers between attic areas and access points will be described in the IFF. Attic inspections will also involve inspection of kneewalls (areas where the pitch of the roofline meets the walls). Kneewalls may be used for storage or to improve the finished look of an attic. Kneewalls will be accessed wherever possible, as these areas may provide additional information on construction material. (For example, kneewalls may have unfinished floors compared with the finished floors in the rest of the attic.) If trusses or bracing posts are present in the attic that may pose an obstacle to potential cleanup, these items will be briefly described in the inspection form.

As detailed in the HASP, decontamination zones will be established during the TAPE project, such as at the base of ladders used to access attic spaces or outside of crawl space entrances. These areas will be covered with two layers of polyethylene sheeting during sampling in the attic or crawl space. After personal and equipment decontamination are complete and polyethylene sheeting removed, decontamination areas will be cleaned of debris and residue using appropriate HEPA vacuuming or wet cleaning procedures. Visitors, including building occupants, will not be permitted to enter the decontamination zone without proper qualifications and authorization.

If potted plants are located inside the primary building, the field teams will note whether vermiculite-containing potting soil is present, as this type of soil could affect results of dust sampling.

As described in the HASP (Appendix A), the field team will not be required to access any attics, crawl spaces, or living areas if there is an unacceptable safety hazard, including biological hazards. The field team will not inspect Troy properties for non-VCI and non-LA asbestos. However, damaged or friable suspect asbestos-containing materials that are observed in the inspection will be noted in the field notebook. This information may be of use in interpreting sampling results and planning potential remediation efforts.

The field team may choose to photo-document specific conditions in the building during the TAPE inspection for future reference. The property owner will be asked for permission before any photographs are taken.

TAPE inspections will be documented on IFFs (Appendix E) and in the field logbooks. Pertinent details will include, but are not limited to, identifying the primary and secondary buildings, defining attic spaces, and sketching on the detailed property maps.

As described in Section 4.3, buildings on a property will be classified as primary or secondary. Every primary and secondary building will be subject to a TAPE inspection, an IFF will be completed, and samples collected.

4.4.1.1 Record Building Locations with GPS

As part of the TAPE inspection, the location of each primary and secondary building on the property will be recorded using the backpack-mounted Trimble XRS-Pro global positioning system (GPS). The GPS

Is this what is being used?

location will be recorded at the primary entrance to each building. In addition, the building's primary entrance will be clearly marked on the building visible on the aerial photograph along with the corresponding building ID number (recorded directly on the building on the photograph. Coordinates will be saved on the GPS with a unique identification number that starts with the notation "BD-XXXXXX," where "BD" indicates a building location, and will also be recorded by the field team on the IFF, at the primary entrance to the building on the air photograph (for buildings shown), and in the field logbook.

4.4.2 Indoor Dust Sampling

Dust samples will be collected using microvacuum (microvac) sampling techniques in all primary buildings, regardless of whether VCI or other LA-containing building materials are observed. Asbestos is not visible to the unaided eye and not all sources (historical or current) may be identified through the verbal interview or during visual inspection, therefore, dust samples are collected at all properties. Dust samples will be collected following the procedures provided in American Society for Testing and Materials (ASTM) *Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations* (D 5755-95), as amended for the Libby Asbestos Superfund Site. A copy of this standard ASTM method is provided in Appendix B, with site-specific applications described below (ASTM 1995).

The decision to use microvac sampling, rather than wipe sampling, for the TAPE inspection and sampling was based primarily on the need to collect data that are consistent with data collected for the Libby Asbestos Superfund Site. EPA, and its contractor CDM, have used microvac sampling methods to collect the indoor dust samples in Libby. Microvac sampling methods are assumed to collect samples that more accurately measure releasable asbestos fibers when compared with wipe samples. Each indoor dust sample will be composed of a three-point composite sample ([redacted]) as described in the above-mentioned ASTM standard (ASTM 1995), as amended.

4.4.2.1 Select Sampling Locations

The TAPE field team will select sample locations based on the team's visual inspection of the buildings and estimation of where contaminated dust is most likely to be found. The number and locations of dust samples will be selected as described below.

Primary and Secondary Buildings

Dust samples will be collected in every primary and secondary building regardless of whether LA contamination was observed during the visual inspection.

- Two dust samples will be collected on each level of the building's living space (including finished basements):
  - One three-point composite sample will be collected from accessible horizontal surfaces (for example, windowsill, shelving, and cabinets). The TAPE field team will select the surface or surfaces based on factors including proximity to observed VCI and dust accumulation. (Preference will be given to surfaces with higher dust accumulation that are closer to observed VCI.)
  - One three-point composite sample will be collected from high-traffic walkways, which will be selected by the TAPE field team based on the most probably walkway for tracking contamination into the building, including walkways adjacent to entry doors on the main floor. It will include main walkways and corridors between living areas on upper floors and in basements without walk-out access. Walkways may be solid surfaces or covered with rugs and carpets, or a combination. Samples will not be collected from temporary floor coverings that may be routinely cleaned or discarded.
- One three-point composite sample will be collected from each unfinished basement, if present. This sample will be collected from both walkways and horizontal surfaces inside the basement, with specific aliquots selected at the discretion of the TAPE field team.
- One three-point composite sample will be collected from each attached garage or shop, if present. This sample will be collected from both high-traffic walkways and horizontal surfaces inside the attached building, with specific aliquots selected at the discretion of the TAPE field team.
- No dust samples will be collected in attics or crawlspaces with visible LA contamination. Based on extensive sampling and analytical results from the Libby Asbestos Superfund Site, VCI found in attics and crawlspaces is assumed to be contaminated with LA fibers (EPA 2003b).
- The field team may choose to collect additional, targeted dust samples if migrating VCI or localized areas of contamination is observed in the living space of a primary structure. These data would be used to design small scale vermiculite removal actions if necessary.

4.4.2.2 Dust Sample Collection

Collecting a microvac dust sample involves vacuuming dust from a surface and drawing the sample through a filter designed to capture particulates larger than 0.45 micrometers (μm). The ASTM method D5755-95, as amended for the Libby Asbestos Superfund Site, provides the procedural details for properly collecting a microvac dust sample (Appendix B, ASTM 1995).

The microvac device will consist of a battery-operated low-volume sampling pump connected to a 25-millimeter (mm) vacuum dust sampler cassette. The analytical laboratory will provide the cassettes and tubing. The cassettes will contain a 0.45-μm mixed cellulose ester filter. A 6.35-mm diameter plastic tubing will be used to connect the cassette to the pump. A 25- to 37.5-mm length of 6.35-mm diameter tubing will be used to create a "nozzle" on the cassette for sampling. The nozzle tubing will be cut at the sampling end at an approximate 45-degree angle.

The pump will be calibrated each morning in the Tetra Tech field office using a standard calibration device such as a Dry-Cal. The pump will be calibrated using a 25-mm vacuum dust sampler cassette to simulate field operation. The flow rate used for sampling will be approximately 2 liters per minute, which provides an approximate air velocity of 100 centimeters per second through the 6.35-mm diameter tubing. The field teams will be equipped with one back-up pump to ensure proper operation and may return to the field office for recalibration as necessary.

The sampling area for each dust sample point (aliquot) will be 100 square centimeters (cm^2) delineated using a fixed template provided with the sampling cassettes. The aliquot sample will be collected by activating the pump and passing the angled nozzle across the delineated surface for 2 minutes.

Each indoor dust sample will contain three sample aliquots; that is, three separate 100 cm^2 surfaces will be vacuumed using one cassette. The cassette will therefore contain dust from a total 300 cm^2 surface area. To collect aliquots, the pump will be turned off and the sampling device moved to the next sample point. Once the next aliquot area has been delineated using a template, the pump will be turned on and the next 100 cm^2 surface area will be vacuumed. When all three sample aliquots have been collected, the sampling device will be turned upside down so that any loose dust falls into the cassette. The exterior of the cassette and nozzle will be wiped clean with a wet towel (wet wipe). The cassette will be detached from the pump, the cap returned to the cassette, and the cassette and the nozzle will be placed in a re-closable plastic bag for shipment to the laboratory (see Appendix B for detail). The nozzle will be

included in the shipment because significant quantities of dust can remain in the nozzle. The sample will be labeled using the pre-printed sample labels and will be wrapped for return to the Tetra Tech field office. Dust samples will be labeled with a unique sample identification number "TT-XXXXX" where "TT" indicates a "Troy TAPE" sample. Chain-of-custody procedures will be followed as described in Section 5.5.2.

Indoor dust sample point locations will be described and recorded in the TAPE field logbook and on the FSDS and may be photographed and sketched on the property map at the discretion of the field team.

4.4.3 Building Materials Sample Collection

The TAPE field team may encounter some building materials (for example, chinking between log in log homes, special concrete with vermiculite added, and lathe and plaster walls) that include vermiculite. These special building materials, when encountered, will be sampled (with as little disturbance as possible to the building's finish) and information recorded in the logbook and on a soil-like materials FSDS. The building material samples will be labeled with a unique sample identification number "TT-XXXXX", where "TT" indicates a "Troy TAPE" sample.

Sampling of building materials will follow EPA guidance document 560/5-85-030A and ASTM Standard E2356-04 (see Appendix B), including the number of samples to be collected from each type of building material. The area to be sampled will be wetted down using surfactant-enhanced water prior to and during sampling to minimize potential asbestos fiber release. After sampling, the field team will use spray-on sealant and/or tape to encapsulate the material sampled if necessary.

As detailed in the HASP, decontamination zones will be established including areas around building material sampling activities. After personal and equipment decontamination are complete, decontamination areas will be cleaned of debris and residue using appropriate HEPA vacuuming or wet cleaning procedures. Visitors, including building occupants, will not be permitted to enter the decontamination zone without proper qualifications and authorization.

4.4.4 Outdoor Inspection (suggest incorporating updated Libby visual inspection and estimation of vermiculite levels into this section on evaluation of soils)

re-read visual inspection

All areas of the Troy properties that are not covered with buildings will be inspected for vermiculite product in soil and surface materials. The areas of the Troy properties that are not covered by buildings will be grouped into two general types: (1) outdoor yards and open space, and (2) specific use areas. Figure 3-2 provides typical outdoor soil sampling designs for these two general types of outdoor areas.

Special attention will be paid to areas where known sources of LA may have been introduced (including fill areas) and to "high traffic areas" where potential LA is likely to be tracked indoors. The TAPE field team may further subdivide the outdoor yards and open space by land use types, such as yards or grassy areas; driveways; parking areas, and filled areas, if known or visible. Sketches will be drawn on the individual property maps to show the separate land use areas. The property sketch will also show fences, large trees, or other potential obstructions to potential future remediation. Properties that do not have yards, such as commercial properties, will be described as such on the IFF and in the field logbooks; outdoor areas such as paved parking or driveways will still be inspected. As best identified by the property owner, property boundary lines will also be noted on the IFF.

One member of the TAPE field team will visually inspect each area for the presence of vermiculite product or LA-containing rock while the second team member documents the locations and estimated quantities of observed vermiculite product on the IFF and in the field logbook. Locations of vermiculite product observed will also be sketched on the property map. Visual outdoor property inspections will not include digging below the soil surface or destructive techniques to investigate underneath asphalt or concrete. It will not be necessary to delineate the vertical extent of contamination because the default excavation depth for remediation of specific use areas is 18 inches below ground surface (EPA 2003b). Similarly, the default excavation depth for remediation of general yard areas, open space, and driveways is 12 inches below ground surface (EPA 2003b).

Specific use areas include current and former flower beds, current or former gardens, planters, compost piles, play areas, gravel or dirt driveways, and stockpiles. These areas will be included in the inspection. Visual inspections of specific use areas will include limited digging below the soil surface with the least disturbance possible.

The field team may elect to photo-document specific conditions on the property for future reference. The property owner will be asked for permission before photographs are taken.

4.4.5 Outdoor Soil Sampling

After the visual inspection of the property has been conducted, the TAPE field team will collect soil samples from special use and yard areas following the procedures described below and in the Tetra Tech's project-specific guidance (Appendix B). Soil will be sampled regardless of the results of the visual inspection. Soil sampling will include the following steps:

Have changed to inc. 30 point composite

- Identify sampling locations
- Collect samples
- Record locations on Troy property map
- Record sample locations using GPS

4.4.5.1 Identify Sampling Locations

TAPE soil samples will be collected as (suggest increasing to 20-30 point composites) five-point composites with composite subsamples taken from similar use areas. Typical designs for outdoor soil sampling are shown graphically on Figure 3-2. It can be assumed that LA sources would have been distributed across an area, for example by tilling into a yard or garden. A minimum of one five-point composite soil sample will be collected at each Troy property, unless the property has no soil-covered areas (for example, all outdoor areas are paved). A five-point composite will also be collected from the specific use areas; however, the size and dimensions of the specific use area may require that less than five subsamples be collected for some specific use areas. At least one five-point composite sample will be collected from the yard area. In general, five-point composite samples will not cover more than approximately 5,000 square feet. A maximum of five, five-point composite samples will be collected at each property, but additional composite or grab samples may be collected at the discretion of the TAPE field team. The TAPE field team will use professional judgment to select the appropriate numbers of soil samples to collect at each property. In addition, the TAPE field team will collect all soil samples with the minimum amount of disturbance to the surface. Sod will be carefully removed and immediately replaced after sampling and care will be taken to collect soil samples without disturbing growing flowers and vegetables. To ensure consistency, all TAPE field teams will be provided the same training and guidelines, and training will include "brainstorming" potential property scenarios and discussing proposed sampling approaches.

4.4.5.2 Collect Soil Samples

Soil samples will be collected from (1) outdoor yards and open spaces, and (2) specific use areas at properties in the Troy OU. Figure 3-2 provides typical outdoor soil sampling designs for these two types of outdoor areas.

change to incorporate 30' point composite.

A typical Troy yard sample will be composed of a five-point composite soil sample collected from the 0 to 1 inch depth. As shown in Figure 3-2, the five individual sample points that will make up each composite sample will be located within a similar land use area, such as the back yard, front yard, or side yard. A minimum of one five-point composite sample will be collected from each Troy OU property with a yard. Additional five-point composite samples will be collected when the yards are larger than 5,000 square feet.

A typical open space sample will also be composed of a five-point composite soil sample, as shown on Figure 3-2, collected from the 0 to 1 inch depth. Typical spacing for the individual five-point locations are shown as approximately 30 feet, but this distance can be modified to best fit the land use area. Additional five-point composite samples will be collected for each open space area of approximately 5,000 square feet. The Tetra Tech field team will use professional judgment to select the appropriate number and type of soil samples to collect for each yard and open space. Not all open spaces may be sampled, depending on current and historical uses. To ensure consistency, all field teams will be provided the same training and guidelines, and training will include "brainstorming" potential property scenarios and discussing proposed sampling approaches.

→ spacing changes w/ more composites

Specific use areas in Troy include outdoor gardens, former gardens, flower-beds, play areas, gravel or dirt driveways, and other areas with potentially greater exposure or greater use of vermiculite amendments. Five-point composite soil samples will be collected from the 0 to 6 inch depth interval in specific use areas. Figure 3-2 presents typical layouts for a garden plot, flower bed, and undefined areas. Typical sample spacing shown on Figure 3-2 is for 10 feet separation, but the distance can be modified to best fit the specific use area. The TAPE field teams will be provided training and guidelines for consistent sampling of specific use areas.

→ changes w/ more composites

Disposable hand trowels will be used to collect approximately 500 grams of soil sample from the 0 to 1 inch or 0 to 6 inch soil interval at each subsample location for a total of approximately 2.5 kg of soil. If a small metal shovel is required to assist with sampling to 6 inches, the shovel will be thoroughly cleaned

and decontaminated after each sample using procedures outlined in Section 5.1. Subsamples will be placed into one re-closable plastic bag and mixed. During sample collection and mixing, the field team will attempt to shield the soil samples from the wind to avoid potentially losing lighter fractions of the soil to the ambient air.

The initial re-closable plastic bag will be placed inside a second bag as a precaution. A pre-printed sample label will be affixed to the outside of the inner re-closable bag as well as the sample ID number written on the outside of the inner bag. The outer re-closable plastic bag will also be labeled and marked similarly using the pre-printed sample ID numbers. Soil samples will be labeled with a unique sample identification number "TT-XXXXX" where "TT" indicates a "Troy TAPE" sample. Chain-of-custody procedures will be followed as described in Section 5.5.2.

The TAPE field team will attempt to restore the land surface to its prior condition after sampling, but Tetra Tech will not be responsible for re-laying sod or replanting. For most sample locations, the small area can be replaced with soil from immediately surrounding the excavation and lightly tamped down. In addition, each TAPE field team will have some commercially-available potting soil or quality topsoil available to repair any small excavations that cannot be easily filled with nearby soil materials. It is not envisioned that sampling will require large-scale disturbance of yards, since the sample size required is small.

4.4.5.3 Record Sample Location on Troy Property Map and with GPS

The field team will mark each soil subsample location on the Troy property map with labeling to indicate the composite sample for which the subsample was collected. A backpack-mounted Trimble XRS-Pro GPS will be used to record the midpoint subsample location for each composite soil sample. The GPS location coordinates will be recorded on the GPS unit with a unique identification number that corresponds with the sample point identification number "SP-XXXXXX." The GPS coordinates will also be recorded in the FSDS and field logbook for backup and verification of sample locations.

Is this what's being used?

4.4.6 Photography

Each TAPE field team will have a camera for photo-documenting the conditions at a property, if the conditions are not readily described in writing or if, in the judgment of the field team, photographs may assist in development of a remedial action plan for that property. Permission from the property owner

will be obtained before any photograph is taken, other than for photographs taken from the public right-of-way.

All photographs will be recorded in the field logbook and on the IFF, and on the property map using the following symbol to indicate the position where the photograph was taken and the direction it was taken (•→). No accurate distance scales will be used for landscape photographs, but general distances can be estimated by noting the location where the photograph was taken. All photographs will be taken using digital cameras and will be downloaded the same day at the Troy Tetra Tech field office and saved onto CD. Photographs will be saved using unique, property-specific IDs. Photographs from each property will be saved into electronic folders that are identified using the property ID number corresponding to the property ID number used in logbooks and on IFFs. Hard copies of digital photographs will not be generated as part of the TAPE but will be available upon request.

5.0 FIELD QUALITY CONTROL PROCEDURES

Section 5.0 describes the methods and procedures for decontamination, quality assurance samples, field documentation, handling investigation-derived wastes, and maintaining chain of custody of samples and records.

5.1 EQUIPMENT AND PERSONNEL DECONTAMINATION

Dust samples will be collected using laboratory-provided filter cassettes with a new cassette and template for each sample collected. The air pump will not require decontamination between samples as a matter of course because of its position behind the sample filter during sample collection. If the exterior of the air pump becomes visibly dusty, it will be wiped clean with a damp paper towel to avoid transferring dust from one location to another.

Disposable scoops and individual sample collection bags will be used for soil and building material sampling; therefore decontamination of the equipment that is in touch with the soil is not necessary. If a small metal shovel is required to assist with sampling to 6 inches in hard, compacted soils, the shovel will be thoroughly cleaned and decontaminated after each sample using a spray bottle with distilled water and paper towels.

Visible soil on hands or clothing will be removed by washing with soap and water. Additional personnel decontamination procedures, including requirements for decontamination zones, are described in Section 9.2 of the HASP (Appendix A). PPE will include disposable gloves, disposable protective outerwear, work boots, and respirators. The respirators will be cleaned and decontaminated as discussed in the HASP (Appendix A).

(Suggest adding a section on "Sample Analysis" providing information on target analytical sensitivities, acceptance criteria, references concerning analyses etc.)

5.2 QUALITY ASSURANCE SAMPLES

Field blank dust samples will be collected at a frequency of one blank sample per 20 samples, or at 5 percent. Field blank dust samples will be collected at locations selected by the TAPE field team, and will be collected by attaching a cassette to the pump and pumping for 1 minute at the same rate as for dust

sample collection. However, the cassette will not have a nozzle, and the end of the cassette will be exposed to indoor air at the selected sampling location, rather than passed over a surface of any kind. Data for the field blank dust samples will be evaluated to assess whether a potential exists for airborne asbestos to cause analytical detections of asbestos in dust, or for cross-contamination to occur during sampling.

Dust lot blank samples will also be submitted to the laboratory for each lot or batch of cassettes received from the laboratory. Data for dust lot blank samples will be used to evaluate whether cartridges were received asbestos-free from the laboratory. Tetra Tech will not use a cassette from a given lot until the dust lot blank results confirm the cartridges are asbestos-free.

Soil field equipment blanks will be collected at a rate of one per calendar week (Monday through Sunday) of sampling per field team. Field equipment blanks will be collected by placing silica sand (that is asbestos-free as analyzed by polarized light microscopy [PLM]) in a re-closable plastic bag, mixing it with a disposable trowel, and submitted for analysis following the same PLM methods. Data from field equipment blank samples will be used to evaluate whether the disposable equipment is asbestos-free.

Field equipment blanks are sent to the EMSL Laboratory located in Libby for analysis by method PLM-9002. In addition, during the initial portion of the field work, at least two dust samples per team will be sent to the EMSL Laboratory for rapid analysis. These samples will confirm the field team members are using proper dust sampling techniques.

Soil field duplicate samples will be collected at a frequency of one sample per 20 composite soil samples, or a rate of 5 percent. Field duplicate samples will be collected as samples collocated in the same land use area (yard or landscaped area, for example) and will contain the same number of subsamples (typically five), but will be collected from different subsample locations. Data for soil field duplicates will be used to evaluate the potential variability in LA concentrations in a specific land use area. These data will not be used to evaluate precision in sampling or analytical techniques.

All quality assurance samples will be submitted "blind" (labeled as a collected sample) to the laboratory.

5.3 FIELD DOCUMENTATION

Example field forms (interview forms, IFFs, and FSDS) are provided in Appendix E. Before the TAPE field activities begin, all members of the Tetra Tech field team will receive the same training on implementation of this Work Plan in general and on use of these forms in particular. Property owner interviews, property inspections, and sample collections will be conducted using these forms to ensure consistency between properties and between TAPE field teams. Use of these forms will also allow compilation of TAPE-derived data into the Libby V2 database (see Section 5.5).

Any additional information that is not recorded on field forms will be recorded in the TAPE field logbooks. Each field team will maintain a field logbook for recording the date and time of each property inspection, the names of the people who allowed property access and completed the interview, the property ID and building ID numbers, the number and type of samples collected at the property including sample ID numbers and FSDS numbers, and any other pertinent information. A new page will be started in the field logbook for each property. The field logbook will serve as an independent (backup) record for all activities conducted and samples collected at a property, in the event that IFFs or FSDSs are lost or damaged. The field logbook will also be used to record additional observations of the field team that relate to potential remedial action at a property, such as locations, quantities and types of suspect asbestos-containing material that is not VCI or LA, and access limitations that were not noted on the IFF.

Information will also be recorded on the individual property maps by sketching directly onto the property maps, which will have an aerial photograph base. Property map sketches will show the locations of any observed VCI and LA-containing rock, primary and secondary buildings and the main entrance of each building, and the outdoor sample (including subsample) locations.

5.4 CONTAINMENT AND DISPOSAL OF INVESTIGATION-DERIVED WASTE

Investigation-derived waste will include used wet wipes, wet paper towels, disposable gloves, used respirator cartridges, used plastic tubing, decontamination water, disposable protective outerwear, plastic floor coverings, and other minimal waste. It is possible, but not likely, that these investigation-derived waste materials may contain some asbestos. Therefore, all investigation-derived waste will be double-bagged in appropriate asbestos bags, labeled with asbestos labels, and stored in approved containment at the Tetra Tech field office until it can be properly disposed of at an approved landfill (Lincoln County outside of Libby). Non-sampling waste generated by the TAPE field teams, such as food containers and waste paper, will be separately bagged and disposed of as solid waste at a solid waste landfill.

5.5 RECORD KEEPING AND CHAIN OF CUSTODY

At the end of each day, or more often if required, the TAPE field teams will return to the Troy Tetra Tech field office to transfer the dust, building material, soil, and QC samples; the IFFs, interview forms, and FSDSs; and copies of the appropriate logbook pages to the Tetra Tech sample coordinator (or the coordinator's designee). All verbal interview forms, IFFs, and FSDSs will be compiled at the Troy field office, photocopied, and the original copies forwarded to the Tetra Tech office in Helena, Montana with a duplicate set of copies forwarded to Volpe on a weekly basis. An individual file will be maintained for each property inspected. Photocopies of all field forms and appropriate logbook pages in each individual property file will be maintained in the Troy field office for the duration of the TAPE project so that information is available if questions arise. The original forms will be stored in the Tetra Tech office in Helena, Montana, for the duration of the sampling, inspection, and reporting phases of the TAPE project. The original forms will be transferred to DEQ at the end of the TAPE project. Copies of the field forms and field logbook will be available on request at any time during the TAPE project to DEQ, EPA, or to the Troy property owners.

After the field forms have been received from the TAPE field teams, the Tetra Tech Field Data Coordinator will check all paperwork and corresponding location, building, and sample ID numbers for accuracy. The Tetra Tech Field Data Coordinator will then transfer the hard copies of the field forms and the associated dust, building material, and soil samples collected for the Troy properties to the CDM Troy Sample Coordinator. The CDM Troy Sample Coordinator will manually enter the information into the eLastic application for ultimate transfer to the Libby V2 database, pursuant to the eLastic data entry SOP (Appendix B). The CDM Troy Sample Coordinator will conduct a 100 percent data check to ensure that all information has been entered correctly. When the data check is complete, the CDM Troy Sample Coordinator will export the data to the Libby V2 database, via Volpe.

Until samples have been transferred to the CDM Troy Sample Coordinator, all TAPE samples will be held by Tetra Tech. Samples may be stored in locked vehicles or in a secured (locked) area of the Troy Tetra Tech field office. All TAPE samples collected from the Troy properties, including QC samples, will be transferred to the CDM Troy Sample Coordinator at least on a weekly basis. The CDM Troy Sample Coordinator will provide Tetra Tech with a copy of a chain of custody, pursuant to the electronic chain-of-custody SOP (Appendix B). The CDM Troy Sample Coordinator will then transfer the samples to the laboratory for preparation and analysis.

Digital photographs will be downloaded daily to a computer at the Tetra Tech Troy field office. Photographs will be downloaded and labeled using a standard labeling procedure that is based on property and building ID numbers. Individual photographs will not be routinely printed from the Troy field office.

6.0 DATA MANAGEMENT

Data management during the inspection and sampling will be under the supervision of the TAPE Field Data Coordinator in the Troy field office. At the conclusion of inspection and sampling, that responsibility will pass to the TAPE project manager.

6.1 DATA REQUISITION

The laboratory will report all analytical data to Volpe and Volpe will oversee integration of that data into the Libby V2 database. Tetra Tech and DEQ will obtain sampling data from the Libby V2 database by requesting that data from Volpe (through EPA) on a standard information request form. Tetra Tech will request the following information from the Libby V2 database for each sample, including QC samples, collected during the TAPE project:

- Sample location
- Sample name
- Sample date
- Sample results
- Identification numbers, dates, and results for laboratory quality control samples

Volpe will provide this information (through EPA) in the standard Libby V2 data report format. All other information necessary for reporting purposes will be obtained from Tetra Tech internal files (copies of IFFs, FSDSs, property sketches, and logbooks).

6.2 DATA REPORTING

Data from the Libby V2 database will be obtained through a geographic information system interface software (ArcView). This interface will provide maps showing all TAPE sample locations. Dust and soil sampling results will be provided from the Libby V2 database in tabulated form, as Microsoft Access files. Tetra Tech will prepare a TAPE project report that describes the activities conducted, the results of the property inspections, and the results of the sampling, evaluates data quality, and recommends follow-up actions. The TAPE project report will include maps for each property where asbestos in soil or in dust exceeded screening levels. TAPE project maps will show sample locations and results for the property and delineate the areal extent of asbestos.

7.0 QA/QC PROCEDURES

The TAPE quality objectives, QC checks and samples, and audits completed for the TAPE project are described in the sections below. Field quality control procedures are described in Section 5.0 above.

7.1 QA/QC OBJECTIVES

The quality objectives of the TAPE project are to obtain 100 percent usable and accurate data. These data will be achieved through inspection and sampling using standardized field forms and procedures, auditing field operations, observing chain of custody procedures, and analyzing field quality control samples and laboratory quality control samples. The DQOs are further discussed in Section 3.0 of this Work Plan.

7.2 INTERNAL QC CHECKS

When laboratory analytical data are received, Volpe will conduct a thorough quality review of that data. Volpe will review data from both laboratory QC samples described below and field QC samples described in Section 5.2. Standard protocols exist for validation of soil samples analyzed by PLM for asbestos and will be followed. Standard protocols do not exist for validation of dust samples for asbestos; however, EPA and their contractors will follow the QC review procedures for dust data established at the Libby Asbestos Superfund Site. EPA and their contractors will prepare validation and review packages for all TAPE data and will transmit the reports to Tetra Tech to be included in the TAPE project report.

Dust and soil samples will be analyzed by one of the contract laboratories following Libby Asbestos Superfund Site protocols, including EPA's most recent protocols relating to QA/QC for the Libby Asbestos Superfund Site. As such, the QA/QC protocols followed by the laboratories are not within Tetra Tech's immediate control.

Laboratory QA/QC samples and standard protocols that the contract laboratory will perform for routine analysis will include appropriate laboratory procedures for the analyses of the following sample types:

- Preparation Duplicate Samples
- Preparation Laboratory Equipment Blanks (grinding and other equipment)
- Method Blank Samples
- Matrix Spike/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Duplicates

- Standard Reference Material
- Surrogates

Volpe will enter data into the Libby V2 project database with a 100 percent QC of the data.

7.3 AUDITS, CORRECTIVE ACTIONS, AND QA REPORTS

Field audits will be an integral part of Tetra Tech's field operations for the duration of the TAPE project. Field audits and corrective actions will be the responsibility of the Tetra Tech QA/QC manager. (See Section 2.0 and Table 2-1 for designated key project personnel.) The TAPE project report will include a discussion of data quality that will include a summary of field audit results. Copies of field audit forms will be provided as an appendix to the TAPE project report.

7.3.1 Field Inspections and Sampling Procedures Audits

The Tetra Tech QA/QC manager will be responsible for audits of TAPE field inspections and sampling procedures. Audits will be conducted daily for the first 5 days of inspection and sampling and at least biweekly for the duration of the TAPE. Audits will consist of the QA/QC manager or his designee attending a Troy property inspection and sampling event and observing the TAPE field team's activities. The field team will not be notified of the audit. The auditor will compare the field team's activities with the protocols provided in this Work Plan and the attached SOPs and evaluate compliance with the protocols using the audit form provided in Appendix E. After the audit, the auditor will provide the completed audit form to the DEQ and Tetra Tech project managers.

7.3.2 Corrective Action Procedures

The QA/QC auditor may use his or her discretion to provide immediate verbal feedback to the TAPE field team if necessary to ensure that deficiencies are fixed as quickly as possible. The Tetra Tech field team leader and QA/QC manager will review the report with the TAPE field team within 48 hours of the audit to correct any deviations or deficiencies. If any deviations or deficiencies were noted, the field team will be audited again within 1 week of the original audit to ensure that any deficiencies have been fixed.

If gross deficiencies are noted, the Tetra Tech QA/QC manager will determine whether re-inspection or re-sampling of any Troy properties is required. Re-inspection or re-sampling will be required only if the TAPE field team failed to correctly identify VCI during inspection, collected samples incorrectly, or collected a grossly inadequate number of samples.

7.3.3 Laboratory Audits

The EPA contract laboratories used to analyze the Troy project samples will be required to provide proof of current certifications. Examples of certifications include the following: American Industrial Hygiene Association and the National Voluntary Laboratory Accreditation Program. The verification of laboratory certifications and QC controls will be under the jurisdiction of Volpe or EPA. These agencies are responsible for conducting the laboratory audits if required.

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APPENDIX A

SITE-SPECIFIC HEALTH AND SAFETY PLAN
TROY ASBESTOS PROPERTY EVALUATION

(The Health and Safety Plan is provided on the enclosed CD)

APPENDIX B

STANDARD OPERATING PROCEDURES (SOPs)
TROY ASBESTOS PROPERTY EVALUATION

Tetra Tech - Troy

- Tetra Tech TAPE FSDS and IFF Completion Guidance, Version 01
- Tetra Tech TAPE Soil Sampling Guidance, Version 01

CDM/EPA – Libby

- CDM-Libby-05 Site-Specific Standard Operating Procedure for Soil Sample Collection
- CDM-Libby-07 CSF eLASTIC Module

American Society for Testing and Materials (ASTM)

- ASTM D5755-95

Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Building Number Concentrations

- ASTM E2356-04

Standard Practice for Comprehensive Building Asbestos Surveys

(The SOPs are provided on the enclosed CD)

APPENDIX C

EQUIPMENT/SUPPLIES LIST
TROY ASBESTOS PROPERTY EVALUATION

APPENDIX D

SAMPLE COVER LETTER, ACCESS AGREEMENT, AND SAMPLE RECEIPT TROY ASBESTOS PROPERTY EVALUATION

APPENDIX E

FIELD FORMS
TROY ASBESTOS PROPERTY EVALUATION